

Serial No. 10/790,056

ASA-1168

Amendment

Responsive to Office Action dated April 30, 2008

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for distributing data multicast ~~sent from a source~~ and addressed to a receiving terminal which does not support a multicast function via a gateway, the multicast distribution method comprising the steps of:

detecting a data request packet, sent from the receiving terminal registered in a first network to the source, at a first gateway located on a transfer path of a packet between the receiving terminal and the source;

retaining an address of the receiving terminal included in the data request packet;

detecting a registration message which the receiving terminal issues ~~issued to~~ a second network;

sending a receive state information packet including information relating address information of the source and destination address information of data multicast ~~sent to a~~ second gateway located on a transfer path of a packet between the second network and the source;

sending from the second gateway a distribution request packet of multicast data, based on a received receive state information packet, to the source; and

converting address information of a multicast data packet sent from the source to an address of the receiving terminal and sending ~~it~~ the multicast data packet to the receiving terminal.

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2. (Currently Amended) A multicast gateway apparatus which transfers a data packet multicast ~~sent~~ from a source and addressed to a receiving terminal requesting to receive the data packet, comprising:

a packet receiving part which receives a packet;

a packet discrimination part which discriminates a kind of received packet;

an access terminal management table which retains an address of the receiving terminal which is a source of a received packet when a received packet is an access request packet to the source;

a receiving terminal management table which, when a received packet is a registration request packet of a receiving terminal, retains an address of a moving destination of the terminal included in the registration request packet;

a data transfer processing part which, when a received packet is a data packet that is multicast ~~sent~~, sets an address of a moving destination of the receiving terminal as a destination address for the received data packet referring to the access management table and the receiving terminal management table; and

a unit for sending a data packet with the address set to the receiving terminal.

3. (Currently Amended) A multicast gateway apparatus according to claim 2, further comprising:

a unit for receiving the control packet of a mobile communication protocol which the receiving terminal sends and receives;

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a unit for adding address information of the multicast gateway apparatus to the received control packet of the mobile communication protocol and sending the control packet;

a unit for receiving the control packet of the mobile communication protocol added with address information of the multicast gateway apparatus;

a unit for retaining address information of the multicast gateway apparatus included in the received control packet of the mobile communication protocol added with the address information of the multicast gateway apparatus; and

a unit for deleting address information of the multicast gateway apparatus included in the received control packet of the mobile communication protocol added with the address information of the multicast gateway apparatus.

4. (Currently Amended) A multicast gateway apparatus according to claim 2, further comprising:

a unit for monitoring a packet sent and received between the receiving terminal and the source; and

a unit for generating a distribution packet which indicates distribution control of a data packet multicast sent to ~~the~~ a nearest multicast router apparatus based on a monitoring result of the monitoring unit.

5. (Currently Amended) A multicast gateway apparatus according to claim 4, wherein the control packet is a packet of a group management protocol.

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6. (Currently Amended) A router apparatus which is provided with a relaying function of a data packet that is multicast-sent, comprising:
- a packet receiving part which receives a packet;
 - a packet discrimination part which discriminates a kind of the received packet;
 - an access terminal management table which, when the received packet is an access request packet to a source of multicast data, retains an address of the receiving terminal which is a source of the received packet;
 - a receiving terminal management table which, when a received packet is a registration request packet of the receiving terminal, retains an address of a moving destination of the terminal included in the registration request packet;
 - a data transfer processing part which, when the received packet is a data packet that is multicast-sent, sets an address of a moving destination of the receiving terminal as a destination address for the received data packet referring to the access management table and the receiving terminal management table; and
 - a unit for sending a data packet with the address set to the receiving terminal.

7. (Currently Amended) A router apparatus according to claim 6, further comprising:
- a unit for receiving the control packet of a mobile communication protocol which the mobile terminal sends and receives;
 - a unit for adding address information of the router apparatus to the received control packet of the mobile communication protocol and sending the control packet;

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a unit for receiving the control packet of the mobile communication protocol with added ~~with~~ address information of the router apparatus;

a unit for retaining address information of the router apparatus included in the received control packet of the mobile communication protocol ~~added with~~ added address information of the router apparatus; and

a unit for deleting address information of the router apparatus included in the received control packet of the mobile communication protocol ~~added with~~ the added address information of the router apparatus and sending the control packet.

8. (Currently Amended) A router apparatus according to claim 6, further comprising:

a unit for monitoring a packet sent and received between the receiving terminal and the source; and

a unit for generating a control packet which indicates distribution control of a data packet that is multicast sent to another router apparatus existing on a network based on a monitoring result of the monitoring unit.

9. (Original) A router apparatus according to claim 8, wherein the control packet is a packet of multicast path control protocol.

10. (Currently Amended) An agent apparatus in a network to which a mobile communication protocol is applied provided with a function defined by the mobile communication protocol, comprising:

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a packet receiving part which receives a packet;

a packet discrimination part which discriminates a kind of the received packet;

an access terminal management table which, when the received packet is an access request packet to a source of multicast data, retains an address of receiving terminal which is a source of the received packet;

a receiving terminal management table which, when the received packet is a registration request packet of a receiving terminal, retains the address of a moving destination of the terminal included in the registration request packet;

a data transfer processing part which, when the received packet is a data packet that is multicast-sent, sets an address of a moving destination of the receiving terminal as a destination address for the received data packet referring to the access management table and the receiving terminal management table; and

a unit for sending a data packet with the address set to the receiving terminal.

11. (Currently Amended) An agent apparatus according to claim 10, further comprising:

a unit for adding address information of the agent apparatus to the control packet of the mobile communication protocol and sending the control packet;

a unit for receiving the control packet of the mobile communication protocol ~~added~~ with added address information of the agent apparatus;

a unit for retaining address information of the agent apparatus included in the received control packet of the mobile communication protocol ~~added~~ with the added address information of the agent apparatus; and

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a unit for deleting the address information of the agent apparatus included in the received control packet of the mobile communication protocol ~~added~~ with the added address information of the agent apparatus and sending the control packet.

12. (Currently Amended) A service system which distributes information to a receiving terminal which is not provided with a receiving function of multicast data using multicast communication, comprising:

a distribution server which multicasts ~~sends~~ data packets including information to provide;

a home agent located in a home network to which the receiving terminal belongs;

a foreign agent located in a foreign network to which the receiving terminal can move;

a first multicast gateway apparatus located on a communication path between the home agent and the distribution server;

a second multicast gateway apparatus located on a communication path between the foreign agent and the distribution server;

wherein the first and the second multicast gateway apparatuses comprise a unit for converting a data packet that is multicast ~~sent~~ to unicast data, and

the first multicast gateway apparatus, ~~on~~ upon receiving a registration message which the receiving terminal issued for the foreign agent, transfers address information of the distribution server and home address information of the receiving terminal to the second gateway,

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the second gateway sends a distribution request packet of multicast data to the distribution server,

and further converts multicast data sent from the distribution server to unicast data and sends the unicast data to the receiving terminal.

13. (Currently Amended) A method for providing service which distributes data multicast ~~sent that is~~ from a distribution server to a receiving terminal which is not provided with a receiving function of multicast data, comprising the steps of:

detecting a data request packet sent from a receiving terminal registered in a first network to the distribution server at a first gateway located on a transfer path of a packet between the receiving terminal and the distribution server;

retaining an address of the receiving terminal included in the data request packet;

detecting that the receiving terminal moved to a second network by a registration message which the receiving terminal issued to the second network;

sending address information of the distribution server and destination address information of data to be multicast ~~sent~~ to the second gateway located on a transfer path of a packet between the receiving terminal after moving to the second network and the distribution server;

sending a distribution request packet of multicast data to the distribution server from the second gateway;

converting destination address information of multicast data sent from the distribution server to an address of the receiving terminal; and

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sending multicast data with the destination address converted to the receiving terminal.